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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/893,869	06/29/2001	Li-Chun Wang	2685/5860	6553

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KENYON & KENYON
1500 K STREET, N.W., SUITE 700
WASHINGTON, DC 20005

EXAMINER
NGUYEN, DUC M

ART UNIT	PAPER NUMBER
2685	9

DATE MAILED: 08/07/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)
09/893,869	Wang
Examiner	**Art Unit**
Duc M. Nguyen	2685

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *Jun 24, 2003* .

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *16-33* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *16-33* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☒ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☒ The proposed drawing correction filed on *Jun 24, 2003* is: a) ☐ approved b) ☒ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

This action is in response to Applicant's response filed on 6/24/03. Claims 16-33 are now pending in the present application.

- Please also note for change in Art Unit number in future response.

Drawings

1. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on 6/24/03 have been disapproved because they introduce new matter into the drawings. 37 CFR 1.121(a)(6) states that no amendment may introduce new matter into the disclosure of an application. The original disclosure does not support the showing of 1.5 R.

Specification

2. The amendment filed 6/24/03 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: "cell(s)..... are separated from one another by a distance of 1.5 R. These distances are clearly defined by the hexagonal geometry depicted therein".

Here, according to Fig. 3, col. 3, lines 16-24 of US **5,365,571** to **Rha** et al, and the disclosure of the paper "A new cellular architecture based on an interleaved cluster concept" to **Wang**, IEEE Trans. On Vehicular Technology, Vol. 48, No. 6, Nov. 1999, the distance d as

mentioned in the amended specification is the **reuse distance** and is **a desired parameter, not** a fix parameter defined by the hexagonal geometry depicted therein. Therefore, the amended statement "These distances are clearly defined by the hexagonal geometry depicted therein" is not found persuasive and present *new subject matter situations with the introduction of the reuse distance of 1.5 R* (see also paper "Channel Alteration and Rotation in Narrow Beam TriSector Cellular System" to Nguyen et al, Fig. 9 regarding the *reuse distance of 1.5 R*).

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 24-29 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. .

Claim 24 recites the limitation of "base stations that are separated from one another by a distance of **1.5 ℝ**". Since the amended specification is not entered for the reason as set forth above, the limitation of "**1.5 ℝ**" *presents new subject matter situations* and was not described in

the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims **16-17, 19-23, 30-33** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Schaeffer** (US Pat No. **5,073,971**) in view of **Rha et al** (US Pat No. **5,365,571**).

Regarding claim **16**, **Schaeffer** discloses a frequency reuse method for a cluster of 4 cells repeat pattern wherein a frequency reuse factor of 2 or each frequency used twice in a cluster of four cells is used (see **Fig. 4, col. 3, line 51-54**). However, **Schaeffer** differ from the claimed limitation in that 6-sector cells are used rather than 3-sector cells as claimed. However, **Rha** discloses prior arts using either a 3-sectors cell or a 6-sectors cell for the same cell layout in a cluster of four cells (N=4, see **Figs. 1, 2A** and **col. 2, line 58 - col. 3, line 46**). Since the use of a 3-sector cell or a 6-sector cell is well known in the art as their selection depends on factors such as cost, bandwidth capability, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate **Rha**'s teaching to modify the above teachings of

Schaeffer for applying the same cell layout (frequency reuse factor of 2) in a cluster of four cells having 3-hexagonal sectors as well, for utilizing advantages provided by 3-sector cells over 6-sector cells such as cost, bandwidth reduction.

Regarding claim **17,** the claim is rejected for the same reason as set forth in claim **20** above. In addition, **Schaeffer** discloses each cell in the cluster is assigned a group of frequency sets that is unique within the cluster (see **Schaeffer**, Fig. 4).

Regarding claim **19,** it is rejected for the same reason as set forth in claim **16** above. In addition, **Schaeffer** discloses a frequency reuse factor of 2 is used (see **Schaeffer, col. 3, line 51-54**).

Regarding claim **20**, it is rejected for the same reason as set forth in claim **16** above. In addition, since **Schaeffer** as modified would disclose the same frequency reuse factor of 2 in a 3-sectors cell, hence by replacing the 6-sector cells with 3-sector cells, the corresponding number of channel sets would be reduced by half, thereby the 12 channel sets for the 6-sector cells would be reduced to 6 channel sets for the 3-sector cells. Therefore, the claimed limitations are made obvious by **Schaeffer** and **Rha** for using six channel sets as claimed, in order to have a 4 tri-cells repeat pattern with each frequency used twice in a cluster of 4 cells (see **Schaeffer, col. 3, lines 51-54**).

Regarding claim **21,** the claim is interpreted and rejected for the same reason as set forth in claim **20** above.

Regarding claim **22,** the claim is rejected for the same reason as set forth in claim **17** above.

Regarding claim **23,** the claim is rejected for the same reason as set forth in claim **20** above. In addition, it is clear that **Schaeffer** would disclose the frequency resources are allocated to provide at least one other sector between the two sectors that share a frequency set (see **Schaeffer**, Fig. 4).

Regarding claims **30-32,** the claims are interpreted and rejected for the same reason as set forth in claim **20** above.

Regarding claim **33,** the claim is rejected for the same reason as set forth in claim **20** above. In addition, it is clear that **Schaeffer** would disclose two sectors having the same assigned frequency set are separated by a third sector having a different assigned frequency set (see **Schaeffer**, Fig. 4).

7. Claim **18** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Schaeffer** in view of **Rha** and further in view of **Brodie** (PCT Pub. No. WO **9634505**).

Regarding claim **18, Schaeffer** as modified would disclose all the claimed limitations, see claim **16** above, except for directional antennas having beamwidths of 50 to 70 degrees. However, **Brodie** discloses a frequency reuse method for 3-sector cells wherein the antennas have a beamwidth of 50 to 70 degrees rather than 120 degrees (see Fig. 2 and page 3, lines 15-16). Therefore, it would have been obvious to one of ordinary skill in the art at the time the

invention was made to provide the above teaching of **Brodie** to **Rha** and **Schaeffer** for using antennas with narrow beamwidths as claimed, in order to reduce channel interferences as compared to overlapping wide beamwidths.

Double Patenting

8. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321© may be used to overcome an actual or provisional rejection based on a non-statutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

9. Claims **16-23, 30-33** are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 of U.S. Patent No. **6,002,935**. Although the conflicting claims are not identical, they are not patentably distinct from each other because they are both directed to a frequency reuse method in a communications system wherein each frequency is used 2 times in a cluster of 4 tri-cells repeat pattern.

Response to Arguments

10. Applicant's arguments with respect to claims 16-33 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- **Faruque**, (US Pat. No. 5,970,411), N=4 directional frequency assignment in a cellular radio system.

- **Tawfik H.**, "Frequency planning considerations for digital cellular systems", IEEE 1990, pages 200-206.

12. **Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for formal communications intended for entry)

(for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington VA, Sixth Floor (Receptionist).

Any inquiry concerning this communication or communications from the examiner should be directed to Duc M. Nguyen whose telephone number is (703) 306-4531, Monday-Thursday (9:00 AM - 5:00 PM). Or to Edward Urban (Supervisor) whose telephone number is (703) 305-4385.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-4700.

Duc Nguyen

Aug. 1, 2003